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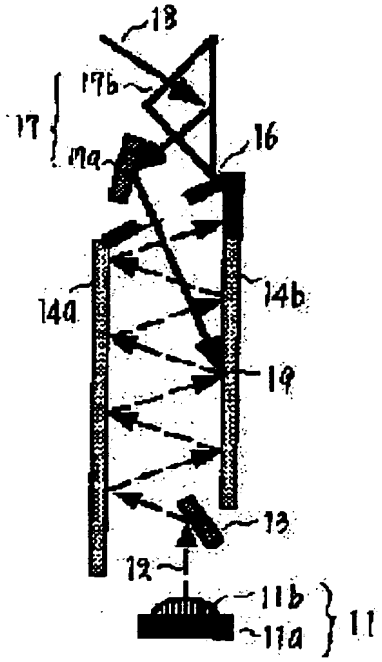
(54) PICTURE EXHIBITING DEVICE



(57)Abstract:

PROBLEM TO BE SOLVED: To provide a picture exhibiting device which provides an observer with a picture accompanied by a feeling of depth regardless of the observer's attitude and photographing conditions.

SOLUTION: A light emitted from a light source 11 is introduced with a light guiding means 13 to a reflection mirror 14. The reflection mirror 14 is constituted to change the optical path length of the light, thereby permitting the repeated reflection of the light at the inside thereof. The reflection mirror 14 is provided with a converging means 16 at the end part and is further provided with a means 17 for controlling the emergent angle. The observer observes the position 19 of a virtual image within the range of viewing angles defined by the means 17 for controlling the emergent angle and the converging means 16 in a form of moving backward an observation optical axis 18 formed by this means 17 for controlling the emergent angle. At this time, the image is recognized as a virtual image positioned apart from the light source as the optical path is long just by a repeatedly reflecting portion.

CLAIMS

[Claim(s)]

[Claim 1] a light guide means draw the light by which outgoing radiation was carried out from the light source in the predetermined direction, an optical-path-length modification means change the optical path length of light led with the above-mentioned light guide means, and the outgoing-radiation angle modification means that carries out outgoing radiation of some images which the light which passed through the above-mentioned optical-path-length modification means

forms in the predetermined direction -- since -- the image presentation equipment characterized by to become.

[Claim 2] The above-mentioned optical-path-length modification means is image presentation equipment according to claim 1 characterized by being the repetitive reflective means which consists of the reflecting mirror which forms the reflecting mirror or a round optical path which counters mutually.

[Claim 3] Image presentation equipment according to claim 1 characterized by constituting the luminescence condition of the above-mentioned light source controllable according to the light and darkness of the image which the light which passed through the above-mentioned optical-path-length modification means forms.

[Claim 4] Image presentation equipment according to claim 2 characterized by preparing the driving means for incident angles which changes the direction which carries out incidence to the above-mentioned repetitive reflective means in the above-mentioned light guide means.

[Claim 5] Image presentation equipment according to claim 4 characterized by equipping the above-mentioned driving means for incident angles with a firefly luminescence means to emit light with an electron ray.

[Claim 6] Image presentation equipment according to claim 1 characterized by establishing an optical-path selection means to choose and introduce a predetermined part among the light irradiated from the above-mentioned light source.

[Claim 7] The above-mentioned light source is image presentation equipment according to claim 1 characterized by being flat-surface image presentation equipment which can present a superficial image.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the image presentation equipment with which an observer can realize an image in the location where the depth directions differ.

[0002]

[Description of the Prior Art] 2 which is different in one candidate 10 for observation as 3-dimensional scenography is shown in drawing 8 as a method with which an observer is provided A direction to television cameras 21 and 22 A photograph is taken. etc. -- They are images 41 and 42 on suitable image presentation equipment about these photoed images 31 and 32. They are an observer's both eyes 61 and 62 respectively with the optical equipment 63 which it shows [equipment] by carrying out and makes only the image concerned penetrate these. The binocular parallax method which it invests [method] independently and makes the solid virtual image 50 realize is used widely.

[0003]

[Problem(s) to be Solved by the Invention] When photography conditions described below by this binocular parallax method, reception of impression of 3-dimensional scenography was difficult. That is, they are the images 31 and 32 for right-and-left eyes of drawing 8 suitably. Like, there is no location gap of a perpendicular direction, horizontally proper parallax is set up, and the magnitude of both images needs to provide an observer with an equal image. However, since the include angle (angle of convergence) which the optical axis of both images accomplishes in fact is not proper, it does not unite as a stereoscopic model, but as shown in drawing 9 (a) and (b), they are twin images 71 and 72. It is observed or Moreover, images 81 and 82 which the size of both images surpasses an

allowed value, and carry out solid fusion neither by the difference of the optical path length of both images, nor the individual difference of a zoom lens as shown in drawing 9 (c) and (d) Become or Or they are the images 91 and 92 with difficult observation of a stereoscopic model like drawing 9 (e) and (f) by the perpendicular gap resulting from the optical-axis gap at the time of the focal zoom scan of the lens attached in the installation error of two cameras, or each camera. There was a case where it became.

[0004] If arrangement of the device for changing the include angle (angle of convergence) both television cameras expect the candidate for observation to be, using the lens which attached the device with a sufficient precision in the dissolution of such faults, or was fully selected is taken into consideration, it will be very much obliged to large-sized strong-ization structural, and will be expensive also in costs.

[0005] Moreover, if it observes with the posture to which the observer inclined to the circumference of a shaft perpendicular to the flat surface which the image for right-and-left eyes shown makes, in order not to unite as a stereoscopic model, an observer will be forced a specific posture and it is not desirable on health. In view of the above-mentioned actual condition, it did not succeed in this invention, and it is not based on an observer's posture or photography conditions, but aims at offering the image presentation equipment accompanying an observer in a feeling of depth.

[0006]

[Means for Solving the Problem] It considered as the image presentation equipment with which this invention consists of a light guide means draw the light by which outgoing radiation was carried out from the light source in the predetermined direction, an optical-path-length modification means change the optical path length of light led with the above-mentioned light guide means, and an outgoing-radiation angle modification means that carries out outgoing radiation of some images which the light which passed through the above-mentioned optical-path-length modification means forms in the predetermined direction in order to attain this purpose.

[0007] In addition, the above-mentioned optical-path-length modification means may be a repetitive reflective means which consists of the reflecting mirror which forms the reflecting mirror or a round optical path which counters mutually. Moreover, according to the light and darkness of the image which the light which passed through the above-mentioned optical-path-length modification means forms, the luminescence condition of the above-mentioned light source may be constituted controllable.

[0008] Moreover, the driving means for incident angles which changes the direction which carries out incidence to the above-mentioned repetitive reflective means can be prepared in the above-mentioned light guide means. Moreover, the above-mentioned driving means for incident angles may be equipped with a firefly luminescence means to emit light with an electron ray.

[0009] Moreover, an optical-path selection means to choose and introduce a predetermined part among the light irradiated from the above-mentioned light source may be established. Moreover, the above-mentioned light source may be flat-surface image presentation equipment which can present a superficial image.

[0010]

[Embodiment of the Invention] Hereafter, the operation gestalt of this invention is explained with reference to a drawing. Drawing 1 is the first operation gestalt of the image presentation equipment concerning this invention, and is the mimetic diagram showing the mechanism and structure of an optical-path modification means especially.

[0011] source of luminescence 11a And condensing means 11b which condenses alternatively the light which spreads in a radial from -- reflecting mirror 14 (14a, 14b) by which opposite arrangement was carried out with a light guide means 13 by which the floodlighting optical axis 12

of the light irradiated from the light source 11 constituted consists of suitable optical system, such as a reflecting mirror, It is led. In addition, the reflecting mirror 14 constitutes the optical-path-length modification means here.

[0012] The light led to the reflecting mirror 14 is the interior of this reflecting mirror 14, and carries out repetitive reflection with the angle of reflection of said light guide means 13 and said reflecting mirror 14 specified with optical and geometric relation. And reflection is interrupted with the light absorption ingredient 15 prepared in the edge of a reflecting mirror.

[0013] The diaphragm means 16 which has a suitable field angle near this light absorption ingredient 15 is formed, and the outgoing radiation angle control means 17 which consists of optical elements (this example reflecting mirror 17a, reflective element 17b) which can be adjusted in whenever [angle-of-reflection] is further arranged in that drawing upper part.

[0014] It is suitable, and although an observer will observe the virtual-image location 19 of the field angle which goes back the observation optical axis 18 which this outgoing radiation angle control means 17 forms and which is specified with the above-mentioned outgoing radiation angle control means 17 and said drawing means 16 within the limits, since only the part of an optical path of repetitive reflection is long, he is realized as a virtual image of the location estranged from the light source at this time.

[0015] The modification of a means to realize the virtual image of the optical path length who is different in drawing 2 is shown. At this modification, it is reflecting mirror 17a of the outgoing radiation angle control means 17. The virtual-image location 20 to observe is changed by leaning to a space clockwise rotation compared with the case of drawing 1 . In this case, it is realized as an image near [drawing 1] the light source.

[0016] The further modification of a means to realize the different optical path length's virtual image is shown in drawing 3 . In this modification, the number of occurrence of the floodlighting optical axis 12 is changed by leaning the include angle of the light guide means 13 arranged around light source 11 to a space counterclockwise rotation. In this case, the image more near the light source can be realized in the almost same virtual-image location 21 as drawing 1 , without leaning the outgoing radiation angle control means 17.

[0017] What is necessary is in the above case, for us to be anxious about the fall of the quantity of light from the light source, so that the optical path length becomes far, but just to make the quantity of light of the light source increase according to distance at this time. although the resolution of the optical path length at whom it gazes is prescribed by the field angle formed of the above-mentioned diaphragm means 16 and the outgoing radiation angle control means 17, if the field angle narrow enough is selected -- so much -- depth -- resolution can be raised.

[0018] The second operation gestalt which starts this invention at drawing 4 is shown. In addition, the explanation which gives the same sign to the same component as the operation gestalt shown in drawing 1 thru/or drawing 3 , and overlaps is omitted. This example is what arranged two or more image presentation equipments of the simple substance shown in the first operation gestalt (41). A firefly luminescence means 42 by which the light source emits light by the exposure of an electron ray 43 is attached. The image location of arbitration is chosen by each outgoing radiation angle control means 17, and they are the observation directions 44a, 44b, and 44c. If it sets up in general in parallel, reception of impression of the image which has a feeling of depth by two-dimensional arrangement will be attained.

[0019] Although the firefly luminescence means 42 according to individual is arranged as a source of luminescence with this operation gestalt, existing liquid crystal or an existing Braun-tube type display may be used. Moreover, although the publication of a light guide means to adjust the incident angle by the side of the light source is omitted with this operation gestalt, the account

means of a light guide the same as that of what was shown in drawing 1 thru/or drawing 3 , or similar may be used together.

[0020] The third operation gestalt which starts this invention at drawing 5 is shown. Optical-path-length modification means 51a, 51b, 51c, and 51d to perform repetitive reflection with this operation gestalt The adjoining thing comrade has adopted the configuration which shares a front flesh side. And optical-path-length modification means 51a, 51b, and 51c In one field, they are the light absorption ingredients 53a, 53b, and 53c. It is arranged and outgoing radiation angle modification means 52a, 52b, and 52c by which an inclination is changeable by electrostatic force or electromagnetic force are formed in the field of another side.

[0021] At this operation gestalt, the light from the light sources 54a, 54b, 54c, and 54d is the light guide means 55a, 55b, 55c, and 55c. By controlling, they are the finer repetitive opticals axis 56a, 56b, and 56c. It can form. In addition, it sets to drawing 5 and they are the light guide means 55a, 55b, 55c, and 55c. Light sources 54a, 54b, 54c, and 54d It consists of a configuration of having allotted dioptric system on movable stanchions, such as set-up piezoelectric material.

[0022] If the image presentation equipment of a simple substance is arranged two-dimensional and the output angle of the same direction can be mostly set up toward an observer, the reception of impression of the image accompanied by a feeling of depth of an observer will be attained. This operation gestalt raises aperture efficiency compared with drawing 4 , and has structure which was really suitable for formation.

[0023] In addition, in this operation gestalt, it cannot be overemphasized that the thing of structure explained with the previous operation gestalt can be used for the light source, a light guide means, and an outgoing radiation angle modification means. The fourth operation gestalt which starts this invention at drawing 6 is shown. With this operation gestalt, two or more image presentation equipments 62 are arranged ahead of the observer 61. If it is arranged in a radial at this time so that each image presentation equipment may accomplish a minute include angle mutually, a good image can be shown to an observer.

[0024] In this Fig., the optical axis which carries out outgoing radiation from each image presentation equipment has set up so that it may converge on the location of an observer's eye in general (63). Thus, when it sets up, presentation of the image of all image presentation equipments is attained at one observer.

[0025] On the other hand, as shown in drawing 7 , the expansion optical system 74 can be arranged between image presentation equipment 62 and an observer, and the convergence location according to an observer's location can also be adjusted. Moreover, although illustration was omitted, if the inclination of each image presentation equipment 62 is made reverse (i.e., if it arranges so that the sense of radiation of image presentation equipment 62 may be made reverse and it may converge by the backside), it will become possible [showing a lot of people a good image] here. Furthermore, if contraction optical system is arranged instead of the above-mentioned expansion optical system, since a lot of image presentation equipments can be shown in an observer's visual field, offer of a more precise image is attained.

[0026] the above -- the 1st Or 2 with an optical-path-length modification means parallel with the 4th operation gestalt Although indicated as a reflecting mirror of **, as long as repetitive reflection is possible, it does not necessarily need to be parallel and the reflecting mirror or dioptric system of three or more sheets may be applied. As mentioned above, it cannot be overemphasized that this invention deforms variously in the range which does not deviate from the meaning, and it can carry out.

[0027]

[Effect of the Invention] Like, according to this invention, it is not based on an observer's posture or

photography conditions, but it becomes possible to offer the image accompanying an observer in a feeling of depth explained above.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] The mimetic diagram showing the first operation gestalt of the image presentation equipment by this invention.

[Drawing 2] The mimetic diagram showing the modification of a means to realize the different optical path length's virtual image.

[Drawing 3] The mimetic diagram showing the further modification of a means to realize the different optical path length's virtual image.

[Drawing 4] The mimetic diagram showing the second operation gestalt of the image presentation equipment by this invention.

[Drawing 5] The mimetic diagram showing the third operation gestalt of the image presentation equipment by this invention.

[Drawing 6] The mimetic diagram showing the fourth operation gestalt of the image presentation equipment by this invention.

[Drawing 7] Drawing showing the modification of drawing 6 .

[Drawing 8] Drawing explaining the principle of the conventional binocular vision.

[Drawing 9] Drawing showing the condition of the fault of a stereoscopic model.

[Description of Notations]

11 Light Source

12 Floodlighting Means

13 Light Guide Means

14 Reflecting Mirror (Optical-Path-Length Modification Means)

17 Outgoing Radiation Angle Control Means

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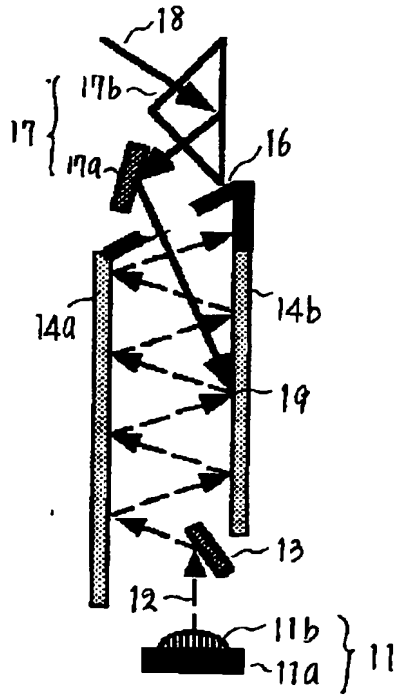
(54)【発明の名称】　映像呈示装置

(57)【要約】
【課題】観察者の姿勢や撮影条件によらず、観察者に臭行感の伴った映像を提供する映像呈示装置の提供を目的とする。
【解決手段】光源11から出射された光は導光手段13によって反射鏡14に導かれる。反射鏡14は光の光路長を変更するもので、その内部で光を反復反射させることが可能である。反射鏡14の端部には絞り手段16が設けられ、さらに出射角制御手段17が設けられる。観察者はこの出射角制御手段17が形成する観察光軸18を逆行する格好で、出射角制御手段17および絞り手段16で規定される画角の範囲内の虚像位置19を観察することになるが、この時、反復反射の分だけ光路が長いため、光源から離間した位置の虚像として感得される。



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【特許請求の範囲】

【請求項１】光源から出射された光を所定方向に導く導光手段と、

上記導光手段で導かれた光の光路長を変更する光路長変更手段と、

上記光路長変更手段を経た光が形成する像の一部を所定の方向に出射する出射角変更手段と、からなることを特徴とする映像呈示装置。

【請求項２】上記光路長変更手段は、互いに対向する反射鏡あるいは一巡光路を形成する反射鏡から成る反復反射手段であることを特徴とする請求項１記載の映像呈示装置。

【請求項３】上記光路長変更手段を経た光が形成する像の明暗に応じて、上記光源の発光状態を制御可能に構成されていることを特徴とする請求項１記載の映像呈示装置。

【請求項４】上記導光手段には上記反復反射手段に入射する方向を変更する入射角用駆動手段が設けられることを特徴とする請求項２記載の映像呈示装置。

【請求項５】上記入射角用駆動手段には電子線によって発光する蛍光発光手段が装着されていることを特徴とする請求項４記載の映像呈示装置。

【請求項６】上記光源から照射される光のうち所定の部分を選択して導入する光路選択手段が設けられていることを特徴とする請求項１記載の映像呈示装置。

【請求項７】上記光源は平面的な映像の呈示が可能な平面映像呈示装置であることを特徴とする請求項１記載の映像呈示装置。

【発明の詳細な説明】

【０００１】

【発明の属する技術分野】本発明は、観察者が奥行方向の異なる位置に画像を感得できる画像呈示装置に関する。

【０００２】

【従来の技術】立体映像を観察者に提供する方式として図８に示す様に、一つの観察対象10を異なる2 方向からテレビカメラ21,22 等で撮影し、これらの撮影された像31,32を適当な映像呈示装置上に映像41,42 として呈示し、これらを当該映像のみを透過させる光学装置63で各々観察者の両眼61,62 に独立に投じて立体虚像50を感得させる両眼視差方式が広く利用されている。

【０００３】

【発明が解決しようとする課題】この両眼視差方式では、撮影条件が以下に記す様な場合、立体映像の感得が困難であった。即ち、好適には図８の左右眼用映像31,32 の様に、垂直方向の位置ずれがなく、水平方向には適正な視差が設定され、両映像の大きさが等しい映像を観察者に提供する必要がある。しかし実際には両映像の光軸が成す角度（輻輳角）が適正でないために立体像として融合せず図９（ａ）（ｂ）のように二重像71,72 に観察されたり、また両映像の光路長の差やズームレンズの個体差などで両映像のサイズが許容値をこえてしまって図９（ｃ）（ｄ）のように立体融合しない像81,82 になったり、或いは２台のカメラの設置誤差や各々のカメラに取着されるレンズのフォーカス・ズーム走査時の光軸ズレに起因する垂直ずれにより図９（ｅ）（ｆ）のように立体像の観察が困難な像91,92 となってしまう場合があった。

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【０００４】これらの不具合の解消に当っては機器を精度よく取り付けるか、あるいは十分に選定されたレンズを用いるしかなく、また両テレビカメラが観察対象を見込む角度（輻輳角）を変える為の機構の配設を考慮すると、機構的に非常に大型堅牢化を余儀なくされ、費用的にも高価なものになってしまった。

【０００５】また観察者が、呈示される左右眼用の映像が作る平面に垂直な軸周りに傾いた姿勢で観察すると、立体像として融合しないため、観察者に特定の姿勢を強いる事になり、健康上好ましくない。本発明は、上記実状に鑑み為されたもので、観察者の姿勢や撮影条件によらず、観察者に奥行感の伴った映像呈示装置を提供する事を目的とする。

【０００６】

【課題を解決するための手段】かかる目的を達成する為に本発明は、光源から出射された光を所定方向に導く導光手段と、上記導光手段で導かれた光の光路長を変更する光路長変更手段と、上記光路長変更手段を経た光が形成する像の一部を所定の方向に出射する出射角変更手段とからなる映像呈示装置とした。

【０００７】なお、上記光路長変更手段は、互いに対向する反射鏡あるいは一巡光路を形成する反射鏡から成る反復反射手段であってもよい。また、上記光路長変更手段を経た光が形成する像の明暗に応じて、上記光源の発光状態を制御可能に構成されていてもよい。

【０００８】また、上記導光手段には上記反復反射手段に入射する方向を変更する入射角用駆動手段を設けることができる。また、上記入射角用駆動手段には電子線によって発光する蛍光発光手段が装着されていてもよい。

【０００９】また、上記光源から照射される光のうち所定の部分を選択して導入する光路選択手段が設けられていてもよい。また、上記光源は平面的な映像の呈示が可能な平面映像呈示装置であってもよい。

【００１０】

【発明の実施の形態】以下、図面を参照して本発明の実施形態について説明する。図１は本発明に係る映像呈示装置の第一の実施形態であり、特に光路変更手段の機序と構造を示す模式図である。

【００１１】発光源11a 及び放射状に広がる光を選択的に集光する集光手段11b から構成される光源11から照射される光の投光光軸12は、反射鏡等の好適な光学系からなる導光手段13により、対向配置された反射鏡14(14a,1

4b) に導かれる。なおここでは反射鏡14は光路長変更手段を構成している。

【００１２】反射鏡14に導かれた光は、この反射鏡14の内部で、前記導光手段13と前記反射鏡14の光学的および幾何学的関係で規定される反射角をもって反復反射する。そして、反射鏡の端部に設けられた光吸収材料15で反射が遮られる。

【００１３】この光吸収材料15の近傍には適当な画角をもつ絞り手段16が形成され、更にその図面上方には反射角度を調整可能な光学要素(本例では反射鏡17a 、反射要素17b)で構成される出射角制御手段17が配設される。

【００１４】観察者はこの出射角制御手段17が形成する観察光軸18を逆行する格好で、上記出射角制御手段17および前記絞り手段16で規定される画角の範囲内の虚像位置19を観察する事になるが、この時、反復反射の分だけ光路が長いため、光源から離間した位置の虚像として感得される。

【００１５】図２に異なる光路長の虚像を感得する手段の変形例を示す。本変形例では出射角制御手段17の反射鏡17a を、図１の場合と比べて紙面時計方向に傾けることにより、観察する虚像位置20を変えている。この場合は図１よりも光源に近い映像として感得される。

【００１６】図３には異なる光路長の虚像を感得する手段の更なる変形例を示す。本変形例では光源11周辺に配設された導光手段13の角度を紙面反時計回りに傾けることにより、投光光軸12の反復回数を変えている。この場合は、出射角制御手段17を傾ける事なく、図１とほぼ同じ虚像位置21でより光源に近い映像を感得できる。

【００１７】以上の場合、光源から光路長が遠くなるほど光量の低下が懸念されるが、この時は距離に応じて光源の光量を増加させれば良い。観察される光路長の分解能は、上記絞り手段16および出射角制御手段17によって形成される画角で規定されるが、十分に狭い画角を選定しておけばそれだけ奥行分解能を向上させることができる。

【００１８】図４に本発明に係る第二の実施形態を示す。なお図１乃至図３に示した実施形態と同一構成要素には同一符号を付して重複する説明を省略する。本例は第一の実施形態に示した単体の映像呈示装置を複数台配設したもの(41)である。光源は電子線43の照射により発光する蛍光発光手段42が取着されている。個々の出射角制御手段17により任意の映像位置を選択し、観察方向44a,44b,44c を概ね平行に設定すれば、二次元的な配設により奥行感のある映像の感得が可能となる。

【００１９】本実施形態では発光源として個別の蛍光発光手段42を配設しているが、既存の液晶あるいはブラウン管式ディスプレイを用いても良い。また、本実施形態では光源側の入射角を調整する導光手段の記載を省略してあるが、図１乃至図３に示したものと同一または類似の導光記手段を併用しても構わない。

【００２０】図５に本発明に係る第三の実施形態を示す。本実施形態では反復反射を行う光路長変更手段51a,51b,51c,51d は隣接するもの同志が表裏を共用する構成を採用している。そして、光路長変更手段51a,51b,51cの一方の面には光吸収材料53a,53b,53c が配設され、他方の面には静電力あるいは電磁力等で傾きを変えられる出射角変更手段)52a,52b,52cが設けられている。

【００２１】本実施形態では光源)54a,54b,54c,54dからの光は導光手段55a,55b,55c,55c を制御することにより、より細かな反復光軸56a,56b,56c を形成できる。なお、図５において導光手段55a,55b,55c,55c は、光源54a,54b,54c,54d に立設した圧電材料などの可動支柱の上に屈折光学系を配した構成からなっている。

【００２２】単体の映像呈示装置を二次元的に配設して、観察者に向かってほぼ同一方向の出力角を設定できれば、観察者は奥行感を伴った映像の感得が可能となる。本実施形態は図４に比べ開口効率を向上させ、一体形成に適した構造となっている。

【００２３】なお、本実施形態においても光源、導光手段、出射角変更手段は、先の実施形態で説明した構造のものを採用できる事は言うまでもない。図６に本発明に係る第四の実施形態を示す。本実施形態では複数の映像呈示装置62が、観察者61の前方に配置されている。この時、個々の映像呈示装置が互いに微小角度を成すように放射状に配設されれば、観察者に対し良好な映像を呈示できる。

【００２４】本図では各映像呈示装置から出射する光軸が、概ね観察者の眼の位置に収束(63)する様に設定している。このように設定した場合、一人の観察者に全ての映像呈示装置の画像を呈示可能となる。

【００２５】一方、図７に示す様に映像呈示装置62と観察者の間に拡大光学系74を配設して観察者の位置に応じた収束位置の調整を行うこともできる。また、ここでは図示は省略したが、個々の映像呈示装置62の傾きを逆にすれば、即ち映像呈示装置62の放射の向きを逆にして後ろ側で収束するように配設すれば、多人数に良好な映像を呈示する事が可能となる。更に上記拡大光学系の代りに縮小光学系を配設すれば、多量の映像呈示装置を観察者の視野内に呈示する事ができるので、より緻密な映像の提供が可能となる。

【００２６】以上第1 乃至第４の実施形態では光路長変更手段は平行な2 枚の反射鏡として記載してあるが、反復反射が可能であれば必ずしも平行である必要はなく、また３枚以上の反射鏡あるいは屈折光学系を適用しても構わない。以上、本発明はその趣旨を逸脱しない範囲で種々変形して実施できることは言うまでもない。

【００２７】

【発明の効果】以上説明した様に、本発明によれば観察者の姿勢や撮影条件によらず、観察者に奥行感の伴った映像を提供する事が可能となる。

5　　6

【図面の簡単な説明】

【図１】本発明による映像呈示装置の第一の実施形態を示す模式図。

【図２】異なる光路長の虚像を感得する手段の変形例を示す模式図。

【図３】異なる光路長の虚像を感得する手段の更なる変形例を示す模式図。

【図４】本発明による映像呈示装置の第二の実施形態を示す模式図。

【図５】本発明による映像呈示装置の第三の実施形態を示す模式図。

＊【図６】本発明による映像呈示装置の第四の実施形態を示す模式図。

【図７】図６の変形例を示す図。

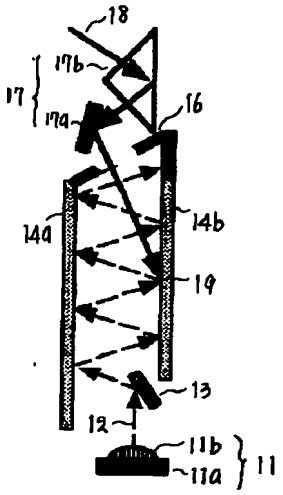
【図８】従来の両眼立体視の原理を説明する図。

【図９】立体像の不具合の状態を示す図。

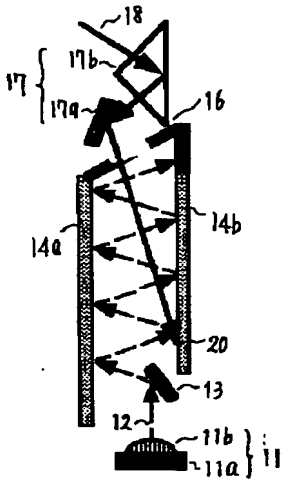
【符号の説明】

11　光源
12　投光手段
13　導光手段
14　反射鏡（光路長変更手段）
17　出射角制御手段

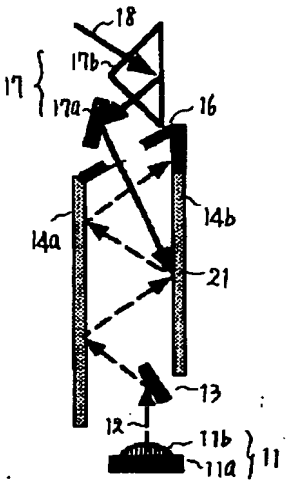
【図１】



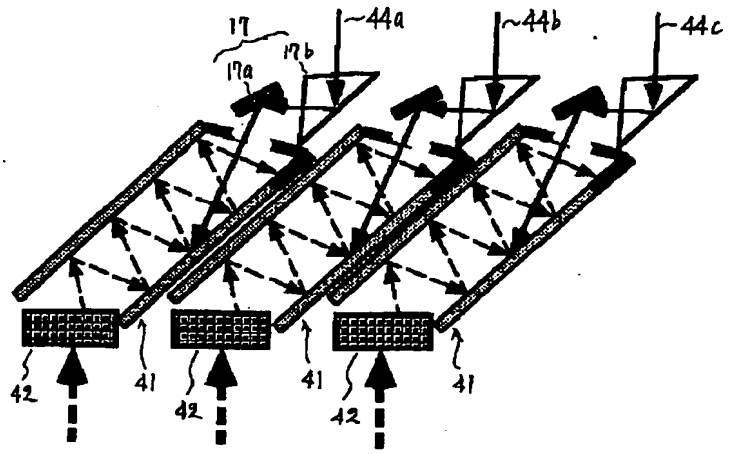
【図２】



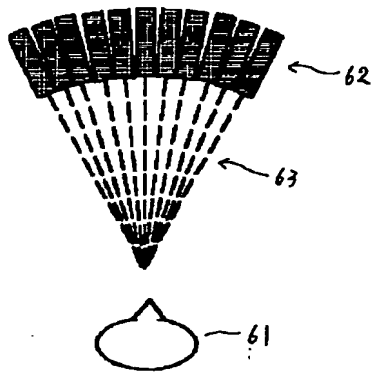
【図３】



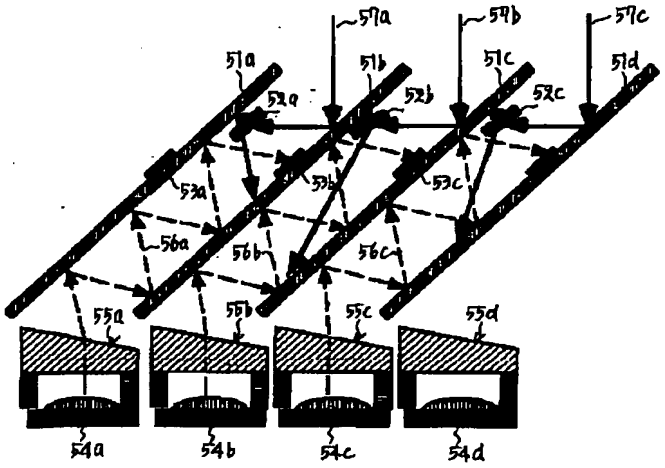
【図４】



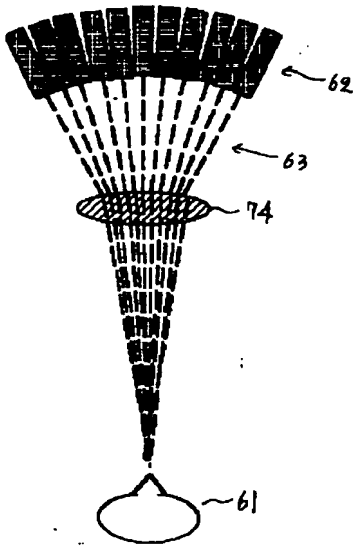
【図６】



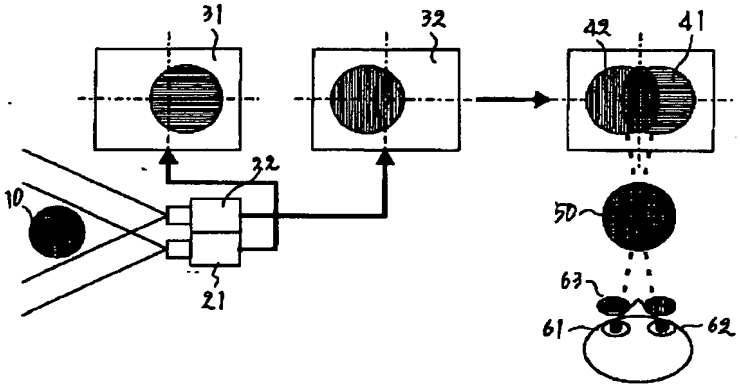
【図５】



【図７】



【図８】



【図９】